

CLAIMS

1. A multicarrier communication apparatus comprising:
 - a superimposing section superimposing corresponding transmission symbols with groups of subcarriers constituting a plurality of subcarriers combined together in predetermined numbers;
 - a control section controlling combined transmission power of the groups of subcarriers the transmission symbols are superimposed upon; and
 - a transmission section transmitting multicarriers signals obtained by controlling the combined transmission power.
- 15 2. The multicarrier communication apparatus according to claim 1, wherein the superimposing section comprises an acquisition section for acquiring only the number of subcarriers where the same transmission symbol is contained in the subcarrier group, and superimposes the acquired same symbols with each subcarrier of a group of subcarriers.
3. The multicarrier communication apparatus according to claim 1, wherein the acquisition section comprises:
 - 25 a repetition section duplicating just transmission bits for a number of subcarriers contained in the groups of subcarriers; and

a modulation section modulating duplicated transmission bits using an M-ary number corresponding to the number of subcarriers so as to acquire the same symbol as for the number of subcarriers.

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4. The multicarrier communication apparatus according to claim 1, wherein the superimposing section comprises:

a separating section separating transmission symbols into in-phase components and orthogonal 10 components; and

a combining section for substituting and combining one of the in-phase component and orthogonal component obtained through separation with a symbol to be paired with the transmission symbol,

15 wherein the transmission symbol after combination and the symbol to be paired with the transmission symbol are superimposed with each subcarrier of the subcarrier group.

20 5. The multicarrier communication apparatus according to claim 1, wherein the control section controls combined transmission power in accordance with a command transmitted from a remote communication station indicating a difference in power between combined 25 received power for the subcarrier group at the remote communication station and desired target received power.

6. The multicarrier communication apparatus according to claim 1, wherein the control section increases and decreases transmission power of each subcarrier in such a manner that power corresponding to the difference in power is distributed evenly across each subcarrier of a subcarrier group.
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7. The multicarrier communication apparatus according to claim 1, wherein the control section controls the combined transmission power in accordance with combined received power information for the subcarrier groups notified by the remote communication station.
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8. A multicarrier communication apparatus comprising:
15 a receiving section receiving a multicarrier signal containing a plurality of subcarriers;
 a measuring section measuring combined received power each group of subcarriers formed by combining predetermined numbers of subcarriers contained in the multicarrier signal;
20 a calculating section calculating a difference in power between the measured combined received power and desired target received power; and
 a notifying section notifying a remote communication station of the calculated difference in power.
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9. The multicarrier communication apparatus according

to claim 8, further comprising:

a combining section combining symbols superimposed on each subcarrier of the groups of subcarriers; and

5 a demodulating section demodulating symbols acquired by combination.

10. A transmission power control method comprising:

a superimposing step of superimposing corresponding transmission symbols with groups of subcarriers that are 10 a plurality of subcarriers combined together in predetermined numbers;

a control step of controlling combined transmission power of the groups of subcarriers the transmission symbols are superimposed upon; and

15 a transmission step of transmitting multicarriers signals obtained by controlling the combined transmission power.

11. A multicarrier communication system controlling 20 transmission power of transmission apparatus using received power occurring at receiving apparatus, the receiving apparatus:

receiving a multicarrier signal containing a plurality of subcarriers;

25 measuring combined received power each group of subcarriers formed by combining predetermined numbers of subcarriers contained in the multicarrier signal;

calculating a difference in power between the measured combined received power and desired target received power; and

5 notifying the transmission apparatus of the calculated difference in power, and the transmission apparatus:

superimposing mutually corresponding transmission symbols with each subcarrier of the subcarrier groups;

controlling combined transmission power of the group 10 of subcarriers the transmission symbols are superimposed with according to a difference in power notified of by the receiving apparatus; and

transmitting a multicarrier signal obtained by controlling the combined transmission power.

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